

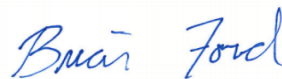
February 15, 2018

Cascade Corporation- Fairview, OR

Sample Delivery Group: L969293
Samples Received: 02/09/2018
Project Number: PNG0564S17
Description: Cascade TSA

Report To: Erin Dunbar/Cindy Bartlett
2201 NE 201st Avenue
Fairview, OR 97024-9718

Entire Report Reviewed By:



Brian Ford
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



TS-C-EFF-020718 L969293-01 GW

Collected by
PY / DTCollected date/time
02/07/18 15:20Received date/time
02/09/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1072685	1	02/12/18 12:11	02/12/18 12:11	LRL

¹ Cp² Tc³ Ss

TS-C-EFF-020718-DUP L969293-02 GW

Collected by
PY / DTCollected date/time
02/07/18 15:21Received date/time
02/09/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1072685	1	02/12/18 12:32	02/12/18 12:32	LRL

⁴ Cn⁵ Sr⁶ Qc

TS-C-INF-020718 L969293-03 GW

Collected by
PY / DTCollected date/time
02/07/18 15:40Received date/time
02/09/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1072685	1	02/12/18 12:53	02/12/18 12:53	LRL

⁷ Gl⁸ Al⁹ Sc

ACCOUNT:

Cascade Corporation- Fairview, OR

PROJECT:

PNG0564S17

SDG:

L969293

DATE/TIME:

02/15/18 17:45

PAGE:

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All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	ND		50.0	1	02/12/2018 12:11	WG1072685
Acrolein	ND		50.0	1	02/12/2018 12:11	WG1072685
Acrylonitrile	ND		10.0	1	02/12/2018 12:11	WG1072685
Benzene	ND		1.00	1	02/12/2018 12:11	WG1072685
Bromobenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
Bromodichloromethane	ND		1.00	1	02/12/2018 12:11	WG1072685
Bromoform	ND		1.00	1	02/12/2018 12:11	WG1072685
Bromomethane	ND		5.00	1	02/12/2018 12:11	WG1072685
n-Butylbenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
sec-Butylbenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
tert-Butylbenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
Carbon disulfide	ND		1.00	1	02/12/2018 12:11	WG1072685
Carbon tetrachloride	ND		1.00	1	02/12/2018 12:11	WG1072685
Chlorobenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
Chlorodibromomethane	ND		1.00	1	02/12/2018 12:11	WG1072685
Chloroethane	ND		5.00	1	02/12/2018 12:11	WG1072685
Chloroform	ND		5.00	1	02/12/2018 12:11	WG1072685
Chloromethane	ND		2.50	1	02/12/2018 12:11	WG1072685
2-Chlorotoluene	ND		1.00	1	02/12/2018 12:11	WG1072685
4-Chlorotoluene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,2-Dibromo-3-Chloropropane	ND		5.00	1	02/12/2018 12:11	WG1072685
1,2-Dibromoethane	ND		1.00	1	02/12/2018 12:11	WG1072685
Dibromomethane	ND		1.00	1	02/12/2018 12:11	WG1072685
1,2-Dichlorobenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,3-Dichlorobenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,4-Dichlorobenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
Dichlorodifluoromethane	ND		5.00	1	02/12/2018 12:11	WG1072685
1,1-Dichloroethane	ND		1.00	1	02/12/2018 12:11	WG1072685
1,2-Dichloroethane	ND		1.00	1	02/12/2018 12:11	WG1072685
1,1-Dichloroethene	ND		1.00	1	02/12/2018 12:11	WG1072685
cis-1,2-Dichloroethene	ND		1.00	1	02/12/2018 12:11	WG1072685
trans-1,2-Dichloroethene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,2-Dichloropropane	ND		1.00	1	02/12/2018 12:11	WG1072685
1,1-Dichloropropene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,3-Dichloropropane	ND		1.00	1	02/12/2018 12:11	WG1072685
cis-1,3-Dichloropropene	ND		1.00	1	02/12/2018 12:11	WG1072685
trans-1,3-Dichloropropene	ND		1.00	1	02/12/2018 12:11	WG1072685
2,2-Dichloropropane	ND		1.00	1	02/12/2018 12:11	WG1072685
Di-isopropyl ether	ND		1.00	1	02/12/2018 12:11	WG1072685
Ethylbenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
Hexachloro-1,3-butadiene	ND		1.00	1	02/12/2018 12:11	WG1072685
Isopropylbenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
p-Isopropyltoluene	ND		1.00	1	02/12/2018 12:11	WG1072685
2-Butanone (MEK)	ND		10.0	1	02/12/2018 12:11	WG1072685
Methylene Chloride	ND		5.00	1	02/12/2018 12:11	WG1072685
4-Methyl-2-pentanone (MIBK)	ND		10.0	1	02/12/2018 12:11	WG1072685
Methyl tert-butyl ether	ND		1.00	1	02/12/2018 12:11	WG1072685
Naphthalene	ND		5.00	1	02/12/2018 12:11	WG1072685
n-Propylbenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
Styrene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,1,1,2-Tetrachloroethane	ND		1.00	1	02/12/2018 12:11	WG1072685
1,1,2,2-Tetrachloroethane	ND	J4	1.00	1	02/12/2018 12:11	WG1072685
1,1,2-Trichlorotrifluoroethane	ND		1.00	1	02/12/2018 12:11	WG1072685
Tetrachloroethene	ND		1.00	1	02/12/2018 12:11	WG1072685
Toluene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,2,3-Trichlorobenzene	ND		1.00	1	02/12/2018 12:11	WG1072685

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,1,1-Trichloroethane	ND		1.00	1	02/12/2018 12:11	WG1072685
1,1,2-Trichloroethane	ND		1.00	1	02/12/2018 12:11	WG1072685
Trichloroethene	ND		1.00	1	02/12/2018 12:11	WG1072685
Trichlorofluoromethane	ND		5.00	1	02/12/2018 12:11	WG1072685
1,2,3-Trichloropropane	ND		2.50	1	02/12/2018 12:11	WG1072685
1,2,4-Trimethylbenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,2,3-Trimethylbenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
1,3,5-Trimethylbenzene	ND		1.00	1	02/12/2018 12:11	WG1072685
Vinyl chloride	ND		1.00	1	02/12/2018 12:11	WG1072685
Xylenes, Total	ND		3.00	1	02/12/2018 12:11	WG1072685
(S) Toluene-d8	111		80.0-120		02/12/2018 12:11	WG1072685
(S) Dibromofluoromethane	86.6		76.0-123		02/12/2018 12:11	WG1072685
(S) 4-Bromofluorobenzene	106		80.0-120		02/12/2018 12:11	WG1072685

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	ND		50.0	1	02/12/2018 12:32	WG1072685
Acrolein	ND		50.0	1	02/12/2018 12:32	WG1072685
Acrylonitrile	ND		10.0	1	02/12/2018 12:32	WG1072685
Benzene	ND		1.00	1	02/12/2018 12:32	WG1072685
Bromobenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
Bromodichloromethane	ND		1.00	1	02/12/2018 12:32	WG1072685
Bromoform	ND		1.00	1	02/12/2018 12:32	WG1072685
Bromomethane	ND		5.00	1	02/12/2018 12:32	WG1072685
n-Butylbenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
sec-Butylbenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
tert-Butylbenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
Carbon disulfide	ND		1.00	1	02/12/2018 12:32	WG1072685
Carbon tetrachloride	ND		1.00	1	02/12/2018 12:32	WG1072685
Chlorobenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
Chlorodibromomethane	ND		1.00	1	02/12/2018 12:32	WG1072685
Chloroethane	ND		5.00	1	02/12/2018 12:32	WG1072685
Chloroform	ND		5.00	1	02/12/2018 12:32	WG1072685
Chloromethane	ND		2.50	1	02/12/2018 12:32	WG1072685
2-Chlorotoluene	ND		1.00	1	02/12/2018 12:32	WG1072685
4-Chlorotoluene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,2-Dibromo-3-Chloropropane	ND		5.00	1	02/12/2018 12:32	WG1072685
1,2-Dibromoethane	ND		1.00	1	02/12/2018 12:32	WG1072685
Dibromomethane	ND		1.00	1	02/12/2018 12:32	WG1072685
1,2-Dichlorobenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,3-Dichlorobenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,4-Dichlorobenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
Dichlorodifluoromethane	ND		5.00	1	02/12/2018 12:32	WG1072685
1,1-Dichloroethane	ND		1.00	1	02/12/2018 12:32	WG1072685
1,2-Dichloroethane	ND		1.00	1	02/12/2018 12:32	WG1072685
1,1-Dichloroethene	ND		1.00	1	02/12/2018 12:32	WG1072685
cis-1,2-Dichloroethene	ND		1.00	1	02/12/2018 12:32	WG1072685
trans-1,2-Dichloroethene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,2-Dichloropropane	ND		1.00	1	02/12/2018 12:32	WG1072685
1,1-Dichloropropene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,3-Dichloropropane	ND		1.00	1	02/12/2018 12:32	WG1072685
cis-1,3-Dichloropropene	ND		1.00	1	02/12/2018 12:32	WG1072685
trans-1,3-Dichloropropene	ND		1.00	1	02/12/2018 12:32	WG1072685
2,2-Dichloropropane	ND		1.00	1	02/12/2018 12:32	WG1072685
Di-isopropyl ether	ND		1.00	1	02/12/2018 12:32	WG1072685
Ethylbenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
Hexachloro-1,3-butadiene	ND		1.00	1	02/12/2018 12:32	WG1072685
Isopropylbenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
p-Isopropyltoluene	ND		1.00	1	02/12/2018 12:32	WG1072685
2-Butanone (MEK)	ND		10.0	1	02/12/2018 12:32	WG1072685
Methylene Chloride	ND		5.00	1	02/12/2018 12:32	WG1072685
4-Methyl-2-pentanone (MIBK)	ND		10.0	1	02/12/2018 12:32	WG1072685
Methyl tert-butyl ether	ND		1.00	1	02/12/2018 12:32	WG1072685
Naphthalene	ND		5.00	1	02/12/2018 12:32	WG1072685
n-Propylbenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
Styrene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,1,1,2-Tetrachloroethane	ND		1.00	1	02/12/2018 12:32	WG1072685
1,1,2,2-Tetrachloroethane	ND	J4	1.00	1	02/12/2018 12:32	WG1072685
1,1,2-Trichlorotrifluoroethane	ND		1.00	1	02/12/2018 12:32	WG1072685
Tetrachloroethene	ND		1.00	1	02/12/2018 12:32	WG1072685
Toluene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,2,3-Trichlorobenzene	ND		1.00	1	02/12/2018 12:32	WG1072685

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,1,1-Trichloroethane	ND		1.00	1	02/12/2018 12:32	WG1072685
1,1,2-Trichloroethane	ND		1.00	1	02/12/2018 12:32	WG1072685
Trichloroethene	ND		1.00	1	02/12/2018 12:32	WG1072685
Trichlorofluoromethane	ND		5.00	1	02/12/2018 12:32	WG1072685
1,2,3-Trichloropropane	ND		2.50	1	02/12/2018 12:32	WG1072685
1,2,4-Trimethylbenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,2,3-Trimethylbenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
1,3,5-Trimethylbenzene	ND		1.00	1	02/12/2018 12:32	WG1072685
Vinyl chloride	ND		1.00	1	02/12/2018 12:32	WG1072685
Xylenes, Total	ND		3.00	1	02/12/2018 12:32	WG1072685
(S) Toluene-d8	111		80.0-120		02/12/2018 12:32	WG1072685
(S) Dibromofluoromethane	89.6		76.0-123		02/12/2018 12:32	WG1072685
(S) 4-Bromofluorobenzene	107		80.0-120		02/12/2018 12:32	WG1072685

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	ND		50.0	1	02/12/2018 12:53	WG1072685
Acrolein	ND		50.0	1	02/12/2018 12:53	WG1072685
Acrylonitrile	ND		10.0	1	02/12/2018 12:53	WG1072685
Benzene	ND		1.00	1	02/12/2018 12:53	WG1072685
Bromobenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
Bromodichloromethane	ND		1.00	1	02/12/2018 12:53	WG1072685
Bromoform	ND		1.00	1	02/12/2018 12:53	WG1072685
Bromomethane	ND		5.00	1	02/12/2018 12:53	WG1072685
n-Butylbenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
sec-Butylbenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
tert-Butylbenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
Carbon disulfide	ND		1.00	1	02/12/2018 12:53	WG1072685
Carbon tetrachloride	ND		1.00	1	02/12/2018 12:53	WG1072685
Chlorobenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
Chlorodibromomethane	ND		1.00	1	02/12/2018 12:53	WG1072685
Chloroethane	ND		5.00	1	02/12/2018 12:53	WG1072685
Chloroform	ND		5.00	1	02/12/2018 12:53	WG1072685
Chloromethane	ND		2.50	1	02/12/2018 12:53	WG1072685
2-Chlorotoluene	ND		1.00	1	02/12/2018 12:53	WG1072685
4-Chlorotoluene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,2-Dibromo-3-Chloropropane	ND		5.00	1	02/12/2018 12:53	WG1072685
1,2-Dibromoethane	ND		1.00	1	02/12/2018 12:53	WG1072685
Dibromomethane	ND		1.00	1	02/12/2018 12:53	WG1072685
1,2-Dichlorobenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,3-Dichlorobenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,4-Dichlorobenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
Dichlorodifluoromethane	ND		5.00	1	02/12/2018 12:53	WG1072685
1,1-Dichloroethane	ND		1.00	1	02/12/2018 12:53	WG1072685
1,2-Dichloroethane	ND		1.00	1	02/12/2018 12:53	WG1072685
1,1-Dichloroethene	ND		1.00	1	02/12/2018 12:53	WG1072685
cis-1,2-Dichloroethene	ND		1.00	1	02/12/2018 12:53	WG1072685
trans-1,2-Dichloroethene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,2-Dichloropropane	ND		1.00	1	02/12/2018 12:53	WG1072685
1,1-Dichloropropene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,3-Dichloropropane	ND		1.00	1	02/12/2018 12:53	WG1072685
cis-1,3-Dichloropropene	ND		1.00	1	02/12/2018 12:53	WG1072685
trans-1,3-Dichloropropene	ND		1.00	1	02/12/2018 12:53	WG1072685
2,2-Dichloropropane	ND		1.00	1	02/12/2018 12:53	WG1072685
Di-isopropyl ether	ND		1.00	1	02/12/2018 12:53	WG1072685
Ethylbenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
Hexachloro-1,3-butadiene	ND		1.00	1	02/12/2018 12:53	WG1072685
Isopropylbenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
p-Isopropyltoluene	ND		1.00	1	02/12/2018 12:53	WG1072685
2-Butanone (MEK)	ND		10.0	1	02/12/2018 12:53	WG1072685
Methylene Chloride	ND		5.00	1	02/12/2018 12:53	WG1072685
4-Methyl-2-pentanone (MIBK)	ND		10.0	1	02/12/2018 12:53	WG1072685
Methyl tert-butyl ether	ND		1.00	1	02/12/2018 12:53	WG1072685
Naphthalene	ND		5.00	1	02/12/2018 12:53	WG1072685
n-Propylbenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
Styrene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,1,1,2-Tetrachloroethane	ND		1.00	1	02/12/2018 12:53	WG1072685
1,1,2,2-Tetrachloroethane	ND	J4	1.00	1	02/12/2018 12:53	WG1072685
1,1,2-Trichlorotrifluoroethane	ND		1.00	1	02/12/2018 12:53	WG1072685
Tetrachloroethene	ND		1.00	1	02/12/2018 12:53	WG1072685
Toluene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,2,3-Trichlorobenzene	ND		1.00	1	02/12/2018 12:53	WG1072685

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,1,1-Trichloroethane	ND		1.00	1	02/12/2018 12:53	WG1072685
1,1,2-Trichloroethane	ND		1.00	1	02/12/2018 12:53	WG1072685
Trichloroethene	6.51		1.00	1	02/12/2018 12:53	WG1072685
Trichlorofluoromethane	ND		5.00	1	02/12/2018 12:53	WG1072685
1,2,3-Trichloropropane	ND		2.50	1	02/12/2018 12:53	WG1072685
1,2,4-Trimethylbenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,2,3-Trimethylbenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
1,3,5-Trimethylbenzene	ND		1.00	1	02/12/2018 12:53	WG1072685
Vinyl chloride	ND		1.00	1	02/12/2018 12:53	WG1072685
Xylenes, Total	ND		3.00	1	02/12/2018 12:53	WG1072685
(S) Toluene-d8	110		80.0-120		02/12/2018 12:53	WG1072685
(S) Dibromofluoromethane	89.1		76.0-123		02/12/2018 12:53	WG1072685
(S) 4-Bromofluorobenzene	106		80.0-120		02/12/2018 12:53	WG1072685

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Method Blank (MB)

(MB) R3286694-3 02/12/18 11:50

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		10.0	50.0
Acrolein	U		8.87	50.0
Acrylonitrile	U		1.87	10.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
n-Butylbenzene	U		0.361	1.00
sec-Butylbenzene	U		0.365	1.00
tert-Butylbenzene	U		0.399	1.00
Carbon disulfide	U		0.275	1.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
cis-1,3-Dichloropropene	U		0.418	1.00
trans-1,3-Dichloropropene	U		0.419	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3286694-3 02/12/18 11:50

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Hexachloro-1,3-butadiene	0.298	U	0.256	1.00
Isopropylbenzene	U		0.326	1.00
p-Isopropyltoluene	U		0.350	1.00
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.349	1.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00
Toluene	U		0.412	1.00
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
1,2,3-Trimethylbenzene	U		0.321	1.00
1,2,4-Trimethylbenzene	U		0.373	1.00
1,3,5-Trimethylbenzene	U		0.387	1.00
Vinyl chloride	U		0.259	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	111			80.0-120
(S) Dibromofluoromethane	89.6			76.0-123
(S) 4-Bromofluorobenzene	105			80.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3286694-1 02/12/18 09:37 • (LCSD) R3286694-2 02/12/18 09:58

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	85.1	90.1	68.1	72.1	10.0-160			5.73	23
Acrolein	125	159	168	127	134	10.0-160			5.48	20
Acrylonitrile	125	121	121	96.9	96.4	60.0-142			0.417	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3286694-1 02/12/18 09:37 • (LCSD) R3286694-2 02/12/18 09:58

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	25.0	23.5	23.2	94.2	92.8	69.0-123			1.42	20
Bromobenzene	25.0	28.0	28.4	112	114	79.0-120			1.56	20
Bromodichloromethane	25.0	25.6	26.4	102	106	76.0-120			3.32	20
Bromoform	25.0	24.3	26.4	97.0	106	67.0-132			8.38	20
Bromomethane	25.0	14.2	13.9	56.9	55.5	18.0-160			2.53	20
n-Butylbenzene	25.0	28.3	28.7	113	115	72.0-126			1.60	20
sec-Butylbenzene	25.0	28.2	28.5	113	114	74.0-121			1.13	20
tert-Butylbenzene	25.0	27.7	28.3	111	113	75.0-122			2.22	20
Carbon disulfide	25.0	24.0	23.8	96.0	95.2	55.0-127			0.762	20
Carbon tetrachloride	25.0	24.1	24.3	96.2	97.2	63.0-122			0.971	20
Chlorobenzene	25.0	29.4	29.0	118	116	79.0-121			1.57	20
Chlorodibromomethane	25.0	25.7	26.0	103	104	75.0-125			1.33	20
Chloroethane	25.0	23.3	22.6	93.1	90.5	47.0-152			2.91	20
Chloroform	25.0	23.5	23.4	94.1	93.4	72.0-121			0.662	20
Chloromethane	25.0	17.7	17.4	70.6	69.4	48.0-139			1.68	20
2-Chlorotoluene	25.0	29.0	28.6	116	114	74.0-122			1.50	20
4-Chlorotoluene	25.0	29.0	29.2	116	117	79.0-120			0.952	20
1,2-Dibromo-3-Chloropropane	25.0	26.3	27.2	105	109	64.0-127			3.30	20
1,2-Dibromoethane	25.0	28.9	28.9	116	116	77.0-123			0.00868	20
Dibromomethane	25.0	27.1	27.3	108	109	78.0-120			0.515	20
1,2-Dichlorobenzene	25.0	28.4	28.7	113	115	80.0-120			1.27	20
1,3-Dichlorobenzene	25.0	29.2	29.2	117	117	72.0-123			0.0175	20
1,4-Dichlorobenzene	25.0	26.8	27.4	107	110	77.0-120			2.15	20
Dichlorodifluoromethane	25.0	21.0	20.5	84.1	81.8	49.0-155			2.72	20
1,1-Dichloroethane	25.0	23.2	22.8	92.8	91.2	70.0-126			1.66	20
1,2-Dichloroethane	25.0	24.6	24.6	98.2	98.4	67.0-126			0.179	20
1,1-Dichloroethene	25.0	25.3	24.6	101	98.4	64.0-129			2.67	20
cis-1,2-Dichloroethene	25.0	24.0	24.4	96.0	97.5	73.0-120			1.63	20
trans-1,2-Dichloroethene	25.0	24.1	23.1	96.4	92.5	71.0-121			4.04	20
1,2-Dichloropropane	25.0	28.1	28.2	112	113	75.0-125			0.339	20
1,1-Dichloropropene	25.0	26.2	25.8	105	103	71.0-129			1.43	20
1,3-Dichloropropane	25.0	29.7	29.3	119	117	80.0-121			1.41	20
cis-1,3-Dichloropropene	25.0	28.1	27.6	112	110	79.0-123			1.91	20
trans-1,3-Dichloropropene	25.0	28.0	28.0	112	112	74.0-127			0.289	20
2,2-Dichloropropane	25.0	27.1	26.9	109	108	60.0-125			0.788	20
Di-isopropyl ether	25.0	23.1	23.3	92.6	93.4	59.0-133			0.846	20
Ethylbenzene	25.0	28.4	27.5	114	110	77.0-120			3.31	20
Hexachloro-1,3-butadiene	25.0	26.3	28.3	105	113	64.0-131			7.53	20
Isopropylbenzene	25.0	27.9	28.0	111	112	75.0-120			0.536	20
p-Isopropyltoluene	25.0	28.1	28.6	112	114	74.0-126			1.65	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3286694-1 02/12/18 09:37 • (LCSD) R3286694-2 02/12/18 09:58

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2-Butanone (MEK)	125	114	116	91.5	92.7	37.0-158			1.28	20
Methylene Chloride	25.0	21.5	21.5	86.0	86.1	66.0-121			0.117	20
4-Methyl-2-pentanone (MIBK)	125	148	146	119	117	59.0-143			1.70	20
Methyl tert-butyl ether	25.0	22.5	23.2	90.1	92.6	64.0-123			2.72	20
Naphthalene	25.0	26.1	26.9	105	108	62.0-128			2.92	20
n-Propylbenzene	25.0	29.4	29.4	118	118	79.0-120			0.0925	20
Styrene	25.0	27.4	28.2	110	113	78.0-124			2.69	20
1,1,1,2-Tetrachloroethane	25.0	27.2	26.8	109	107	75.0-122			1.58	20
1,1,2,2-Tetrachloroethane	25.0	30.2	31.0	121	124	71.0-122		J4	2.48	20
Tetrachloroethene	25.0	28.6	27.9	114	112	70.0-127			2.44	20
Toluene	25.0	27.8	27.2	111	109	77.0-120			2.02	20
1,1,2-Trichlorotrifluoroethane	25.0	27.5	27.5	110	110	61.0-136			0.112	20
1,2,3-Trichlorobenzene	25.0	27.8	29.6	111	118	61.0-133			6.29	20
1,2,4-Trichlorobenzene	25.0	26.1	27.2	105	109	69.0-129			4.13	20
1,1,1-Trichloroethane	25.0	23.9	24.2	95.4	96.8	68.0-122			1.46	20
1,1,2-Trichloroethane	25.0	29.5	29.5	118	118	78.0-120			0.0984	20
Trichloroethene	25.0	26.9	26.8	108	107	78.0-120			0.333	20
Trichlorofluoromethane	25.0	24.2	23.6	96.7	94.4	56.0-137			2.38	20
1,2,3-Trichloropropane	25.0	27.6	28.1	110	112	72.0-124			1.93	20
1,2,3-Trimethylbenzene	25.0	28.3	28.3	113	113	75.0-120			0.224	20
1,2,4-Trimethylbenzene	25.0	28.6	28.6	114	114	75.0-120			0.00433	20
1,3,5-Trimethylbenzene	25.0	27.3	27.5	109	110	75.0-120			0.767	20
Vinyl chloride	25.0	21.2	21.3	84.6	85.0	64.0-133			0.481	20
Xylenes, Total	75.0	85.2	82.4	114	110	77.0-120			3.34	20
(S) Toluene-d8				107	105	80.0-120				
(S) Dibromofluoromethane				86.8	87.7	76.0-123				
(S) 4-Bromofluorobenzene				101	101	80.0-120				

1
Cp

2
Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
 * Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ^{1 4}	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

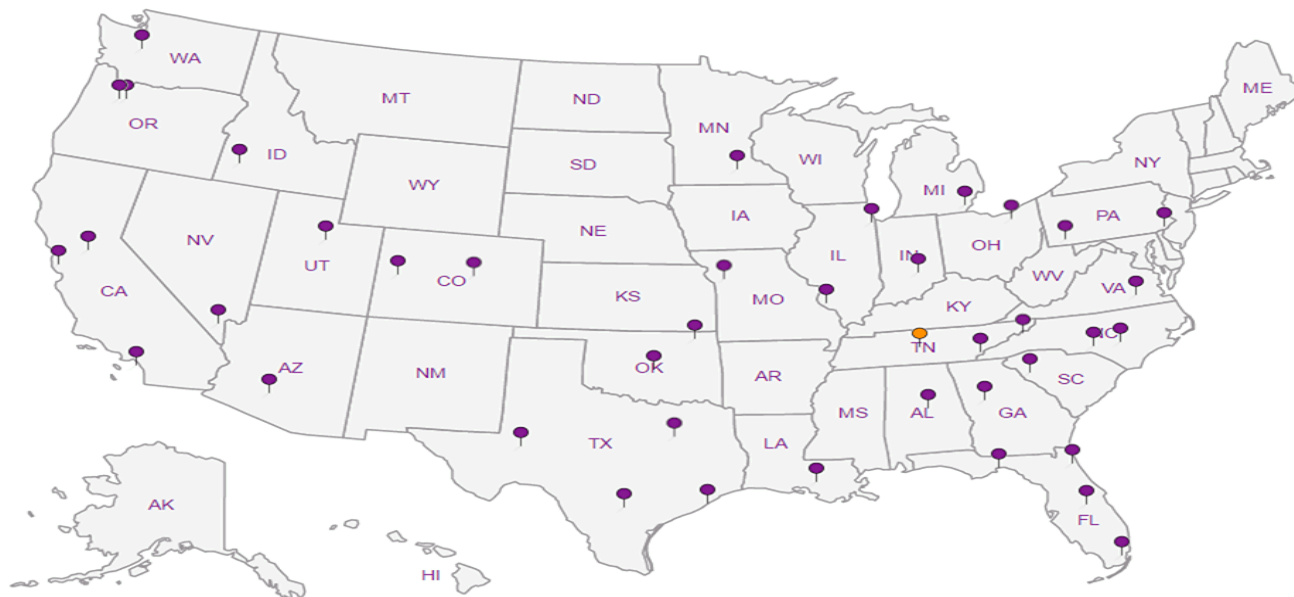
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



ACCOUNT:

Cascade Corporation- Fairview, OR

PROJECT:

PNG0564S17

SDG:

L969293

DATE/TIME:

02/15/18 17:45

PAGE:

16 of 17

Cascade Corporation- Fairview, OR

2201 NE 201st Avenue
Fairview, OR 97024-9718

Billing Information:
Accounts Payable
P.O. Box 20187
Portland, OR 97294-0187

Report to:
Erin Dunbar/Cindy Bartlett

Email To: CBartlett@Geosyntec.com;
edunbar@Geosyntec.com

Project
Description: *Cascade TSA*

City/State
Collected: *Fairview OR*

Phone: 503-669-6286
Fax:

Client Project #
PNG0564S17

Lab Project #
CASCORFOR-PNG0564S17

Collected by (print):
PAT YADON Director/Inspector

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Quote #

Date Results Needed

Immediately
Packed on Ice N Y X

No.
of
Ents

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Ents	Analysis / Container / Preservative	Chain of Custody
TS-C-EFF-020718		GW		2/7/18	15:20	3	X	
TS-C-EFF-020718-DUP		GW		2/7/18	15:21	3	X	
TS-C-INF-020718		GW		2/7/18	15:40	3	X	
		GW				3	X	
		GW				3	X	
		GW				3	X	
		GW				3	X	
		GW				3	X	
		GW				3	X	
		GW				3	X	

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks: (20) PDBs

* Trip and Temp Blank in Cooler

Samples returned via:
UPS FedEx Courier

Tracking # 4269 9202 1369

pH Temp
Flow Other

Sample Receipt Checklist

COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes / No
HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 2.72°C
Bottles Received: 9

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 2/8/18
Time: 8:45

Hold: Condition:
NCF / OK